

REMARKS

In the present Amendment, claim 1 has been amended to recite that the layer provided on the surface of the support includes both the graft polymer and the adsorbed fine particles capable of polarly bonding to the polar groups in the side chains of the graft polymer. Section 112 support for the amendment may be found, for example, at page 6, line 3 to page 7, line 12, and page 12, lines 17-22 of the specification.

No new matter has been added, and entry of the Amendment is respectfully requested.

Claims 1-4 are pending.

Referring to the Advisory Action mailed January 20, 2006, Applicants note with appreciation that the section 102(e) rejection based on Kawamura et al '947 and the obviousness-type double patenting rejection based on copending Application No. 10/374,079 have been overcome.

The only remaining rejection is under section 103. That is, claims 1-4 are rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Horowitz et al (US 3,998,602). See Paragraph No. 5 of the Office Action mailed September 22, 2005.

Applicants submit that this rejection should be withdrawn because Horowitz et al does not disclose or render obvious the functional surface member of the present invention. The present claims are patentable over Horowitz et al.

As recited in independent claim 1, the present invention relates to a functional surface member. The surface member includes a support having a surface to which a graft polymer chain having a nonionic polar group in the side chains thereof is bonded. A layer which includes both the graft polymer and adsorbed fine particles capable of polarly bonding to the nonionic

polar groups in the side chains of the graft polymer is provided on the surface. Claim 1 further recites that the nonionic polar group is a heteroaromatic group having a nitrogen atom or a sulfur atom.

In the Advisory Action, the Examiner states that the request for reconsideration does not place the application in condition for allowance because:

Applicant's arguments filed 12/22/2005 are not persuasive with regards to Horowitz et al. The Applicant first argues that one having ordinary skill in the art would not have been led or motivated to employ N-vinyl pyridine as a polymerizable monomer in preference to or rather than all of the other monomers disclosed in Horowitz et al beginning at column 5, line 8. However, the Examiner notes that Horowitz et al clearly recite N-vinyl pyridine in the disclosure as well as in the claims hence leading one skilled in the art to select N-vinyl pyridine from the list of suitable monomers wherein the Examiner notes that there is no clear showing on the record of any unexpected results with regards to N-vinyl pyridine.

The applicant next argues that Horowitz et al do not teach or suggest a layer comprising adsorbed fine particles capable of polarly bonding to the polar group as required in present claim 1. However, as recited in the prior Office Action, Horowitz et al clearly teach a layer of copper plated on to the grafted polymer surface wherein the Examiner takes the position that the layer of copper reads upon the instantly claimed layer of adsorbed fine particles capable of polarly bonding to the polar group. Though the Applicant further argues that "a graft polymer necessarily does not exist between copper particles in the layer, since the layer copper plating" and that in contrast, in the present invention, the graft polymer exists between, for example, copper particles or the adsorbed fine particles, the Examiner notes that the instant claims do not recite this feature and hence Applicant's argument are not persuasive with regards to the claims as instantly recited.

In response, Applicants submit that the layer of copper in Horowitz et al relied upon by the Examiner is a simple continuous layer consisting of copper. In contrast and as clarified by the above amendment, the layer of the present invention is, in effect, a composite layer including the adsorbed fine particles and the graft polymer. There are two structural distinctions here. First, a continuous layer is plainly different from fine particles, in terms of structure. One could analogize the difference as being similar to the difference between a pile of sand and a plate of sheet glass. Second, the claims now expressly recite that the layer in question includes both the graft polymer and the adsorbed fine particles, i.e., the graft polymer (or at least the side chains thereof) is present between the adsorbed fine particles. Thus, the Examiner's assertion that "the instant claims do not recite this feature and hence Applicant's argument are not persuasive with regards to the claims as instantly recited," is addressed by the present Amendment.

In more detail, Horowitz et al '602 does not disclose or suggest a layer comprising "adsorbed fine particles capable of polarly bonding to the polar group," as required in present claim 1. In this regard, Horowitz discloses the use of a small amount of silver ion as an initiator system for grafting a polymer onto a substrate surface. See, for example, Horowitz et al at column 6, lines 4-10. According to Horowitz, after curing, the polymerized grafted layer has "finely divided metallic silver bound in the interstices of the graft polymer layer." See Horowitz at column 6, lines 24-27. Finely divided metallic silver bound in the interstices of a graft polymer layer is not the same as a layer having thereon adsorbed fine particles.

Next, Horowitz et al metallize the surface of the article. They state that the article to be metallized is then contacted with an electroless copper plating solution, "and the copper nucleates on the metallic silver to provide a thin continuous layer of copper which is bound to

the silver atoms, which are in turn secured to the substrate by the polymeric layer.” As discussed above, a thin continuous layer of copper is not the same as a layer comprising adsorbed fine particles.

Further, with regard to the finely divided metallic silver disclosed in Horowitz et al, although the size of the metallic silver is not entirely clear from Horowitz et al’s disclosure, it appears from the mechanism disclosed in Horowitz et al that the size of the metallic silver would be an atomic size, which is considerably smaller than that of the adsorbed fine particles in the present invention.

Still further, with regard to the thin continuous layer of copper disclosed in Horowitz et al, this layer is a single layer of copper and a graft polymer necessarily does not exist between copper particles in the layer, since the layer is formed by copper plating. In contrast, in the present invention, the graft polymer exists between, for example, copper particles (i.e., the adsorbed fine particles). As noted, the present Amendment clarifies this distinction over Horowitz et al.

Finally, there is nothing in Horowitz et al which would lead or motivate a person of ordinary skill in the art to employ N-vinyl pyridine as a polymerizable monomer in preference to or rather than all of the other monomers disclosed in Horowitz et al beginning at column 5, line 8.

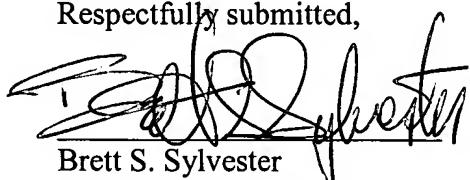
In view of the above, Applicants respectfully submit that the section 103 rejection of claims 1-4 based on Horowitz et al should be reconsidered and withdrawn.

Amendment Under 37 C.F.R. § 1.114
U.S. Appln. No. 10/663,845

Allowance is respectfully requested. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

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